



Massachusetts Division of
Health Care Finance and Policy

ANALYSIS IN BRIEF

Number 8
June 2005

Frequent Users of Massachusetts EDs

Background

As many as 17.5% of Emergency Department (ED) visits are made by a small population of frequent users who comprise 3.8% of the total ED patient population. While some frequent users may be appropriately served in the ED, such high utilization has raised concerns among providers and payers. EDs are not designed to provide on-going, non-urgent, comprehensive care to patients with chronic conditions. Patients who need frequent care are likely to receive better, more coordinated care in a primary care setting. Since charges for ED visits are generally higher than those for other settings, payers prefer their enrollees to avoid unnecessary use of the ED.

Another concern is that EDs often don't have the patient's full medical history and thus needless and costly testing and screening sometimes occur that would otherwise be avoided had the patient visited his or her primary care physician. Finally, given the chronic problem of overcrowding in many Massachusetts EDs, any relationship between frequent users and the increasing volume of ED patients is important to identify.

This issue of *Analysis in Brief* focuses on frequent users of EDs. While ED physicians are likely aware of patients who return frequently to their facility for care, they may not be aware that some of these same patients visit other EDs as well. Since multiple visits to a myriad of providers can exacerbate problems with coordination of care, this report also looks at a subset of frequent users—those who not only made multiple ED visits in a 12-month period, but who also visited four or more distinct ED facilities. The populations of both frequent users and “traveling” frequent users of multiple EDs were examined to determine how their utilization patterns, clinical characteristics, and demographic characteristics

differed from those of other ED patients. The implications of these findings may prove useful in developing interventions to improve the quality of medical care and decrease inappropriate use of the ED.

Methodology

This retrospective observational study by the Division of Health Care Finance and Policy (DHCFP) utilized data from all patients who visited one of the 75 ED sites in Massachusetts during Fiscal Year (FY) 2003 (October 1, 2002 to September 30, 2003). The primary sources of data were three DHCFP encounter-level databases. The Massachusetts ED Outpatient Database contains visit-level information for patients who were discharged as outpatients. The Hospital Inpatient Discharge Database and the Outpatient Observation Database were used to identify ED visits that resulted in inpatient admissions or observation stays. These visits were marked by ED flags in both databases. The combination of records from these three databases constitutes a complete census of ED visits for non-federal Massachusetts acute care hospitals.¹

Patients were considered frequent ED users if they visited a Massachusetts ED five or more times in FY03. This definition was based on a review of previous frequent user studies and the specific distribution of ED visits in Massachusetts.^{2,3} When available, a valid encrypted social security number (SSN) was used to identify individual patients and their associated ED visits in all three databases. There were 2,779,096 documented ED visits in FY03. For 12.8% of all ED visits, patients did not provide a valid SSN, and the majority (63.2%) of these visits were made by children under age 15. In order to include these visits in this DHCFP analysis, patients without a

valid SSN were given a separate identifier. Consistent across hospitals, this was a numeric identifier that linked the patient's gender, race, ZIP Code, and date of birth. Although it is possible that such an identifier could over count frequent visits, it is more likely to undercount multiple visits by one individual, e.g., when a patient makes ED visits both before and after moving from one ZIP Code to another during the year. Tests of this identifier showed that it was somewhat less sensitive than the SSN in detecting multiple visits to EDs by an individual, so overall estimates of the number of frequent users and their associated visits are probably conservative, particularly among children. Records for individuals with extremely high numbers of visits were examined individually to check for indication of data errors, but none were found.

Persistence of frequent ED use over time was examined using data from FY02, and patterns of frequent use in FY02 were compared to patterns in FY03. Individuals who were frequent ED users in both years were flagged.

Results

In FY03, one out of every 100 Massachusetts residents was a frequent user of an ED. In total, there were 64,062 frequent users who made 488,217 visits, with the specific number of visits by each individual varying substantially between 5 and 254. Some hospitals were frequented

more often by this population than were other hospitals. The proportion of a hospital's total ED visit count that stemmed from frequent users ranged from 8.0% to 48.8%. Large variation existed in the number of distinct facilities visited by an individual, with patients visiting anywhere from 1 to 43 different ED facilities during the 12-month period. Almost 60% of frequent users visited more than one facility, and approximately 10% (6,086) visited four or more EDs. In extreme cases, some patients traveled significant distances and visited multiple EDs on the same day.

Traveling frequent users (who visit four or more EDs in one year) appear to be a distinct subpopulation of frequent users. Their demographics differ significantly from other ED users—both non-frequent and frequent. Among non-frequent ED users, there was little difference in utilization by males and females. This distribution was different for non-traveling frequent users where slightly more females were frequent users (54.9%). However, among traveling frequent users, males were significantly more likely to present at multiple ED facilities (see Figure 1); over 20% more males than females visited four or more ED facilities.

Age was also a distinguishing feature of traveling frequent users. In general, people over the age of 65 were most likely to visit an ED, as determined by ED visit rates per 1,000

Massachusetts residents. This was true for non-frequent and frequent users alike, but was not the case for traveling frequent users. Among traveling frequent users, over half of the ED visits were made by people ages 25 to 44 and only 5.0% were made by the elderly (see Figure 1). In addition, a larger percentage of traveling frequent users were white compared to other frequent and non-frequent users. Among non-frequent users, 75.6% of users were white compared to 74.9% of non-traveling frequent

Figure 1: Demographic Factors, FY03

	Non-Frequent Users	Frequent Users	
		Non-Travelers	Travelers
Gender			
Female	50.8%	54.9%	45.0%
Male	49.1%	45.1%	55.0%
Age			
0-14	18.6%	7.5%	1.0%
15-24	16.0%	14.2%	14.5%
25-44	29.1%	33.9%	56.2%
45-64	19.7%	21.9%	23.3%
65+	16.6%	22.6%	5.0%
Race			
Black	7.9%	11.0%	9.9%
White	75.6%	74.9%	81.2%
Hispanic	9.1%	10.8%	4.9%

users and 81.2% of traveling frequent users (see Figure 1). However, among all ED user groups, visit rates (357 per 1,000 residents) were highest for blacks.

The distribution of payer source also differed among ED user groups (see Figure 2). Nearly 50% of non-frequent ED user visits were covered by private insurance, while 13.1% of visits were made by uninsured people and 12.8% were covered by Medicaid. Among frequent users visiting fewer than four facilities, private payers covered 25.4% of visits, while 13.1% were made by the uninsured and Medicaid covered 27.6%. For traveling frequent users, Medicaid covered the largest percentage of visits (36.7%), private insurers covered 21.2%, and 20.0% were uninsured visits.

Payer cycling, having multiple payer sources in a 12-month period, is common among frequent ED users. Among non-traveling frequent users, 31.2% were covered by multiple payers (i.e. private insurance, Medicaid, or were uninsured). For traveling frequent users, this number was much higher, as 60.1% had some degree of payer cycling (see Figure 2). This may be explained, in part, by the large portion (40.6%) of non-traveling frequent users with just one payer—Medicare. However, even when several payers were involved over the course of the year, it was often the case that one payer would cover the individual for a set amount of time before the patient's expected payer source switched. Over the course of the year, 63.8% of frequent users reported having private insurance, 64.1% reported having Medicaid coverage, and 14.7% had at least one visit where Medicare was the expected source of payment. In addition, 68.5% of traveling frequent users with multiple expected payers reported being uninsured during at least one visit.

This study also looked at whether a patient received a routine discharge or was admitted

to inpatient care or to an outpatient observation stay for each visit. Among each age group, frequent ED users were admitted to the hospital more often than non-frequent users. However, among frequent users visiting multiple ED facilities, this was not the case. The admission rate for frequent users who visited one to three ED facilities was 20.2%. This compares to an admission rate of 14.2% among non-frequent ED user visits and 11.8% for traveling frequent users.

The clinical conditions of traveling frequent users also differentiated this group from frequent and non-frequent users. Diagnoses pertaining to substance abuse, mental health,

Figure 2: Payment Sources, FY03

	Non-Frequent Users	Frequent Users	
		Non-Travelers	Travelers
Primary Expected Payer			
Medicaid	12.8%	27.6%	36.7%
Medicare, 65+	15.8%	19.2%	3.0%
Medicare, Disabled	3.2%	12.1%	16.7%
Private	48.8%	25.4%	21.2%
Uninsured	13.1%	13.1%	20.0%
Number of Payer Types during FY03			
1	94.9%	68.8%	39.9%
2	4.9%	25.6%	40.6%
3	0.0%	5.2%	17.0%
4 or more	0.0%	0.4%	2.5%

diseases of the teeth, and back pain were much more common among traveling frequent users. A diagnosis relating to substance abuse was 10.6 times more likely among traveling frequent users than among non-frequent users and 3.4 times more likely among traveling frequent users than among frequent users who visited fewer than four facilities.

In addition, traveling frequent users were 4.6 times as likely to have disease of the teeth, 3.1 times as likely to have lumbago or other back pain, 4.0 times as likely to have a mental health diagnosis, and 5.6 times more likely to have a migraine headache than non-frequent users. When compared to non-traveling frequent users, the frequent users who visited four or more facilities were 2.7 times as likely to have a disease

Figure 3: Common Primary Diagnoses Among Traveling Frequent Users, FY03

Disease Conditions	Non-Frequent Users	Frequent Users	
		Non-Travelers	Travelers
Mental Disorders	2.7%	6.2%	10.8%
Substance Abuse	1.0%	3.1%	10.5%
Lumbago and Other Back Pain	2.5%	3.5%	7.8%
Diseases of the Teeth	1.0%	1.7%	4.5%
Migraine Headache	0.4%	1.4%	2.3%

of the teeth, 2.2 times as likely to have lumbago or other back pain and 1.7 times as likely to have a mental health diagnosis or to present with a migraine headache (see Figure 3).

The Massachusetts ED database includes Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) codes associated with outpatient ED visits. For this study, DHCFP staff analyzed relative resource intensity to determine the types of services performed most often during visits by frequent users. Among visits with recorded visit codes (CPT codes 99281-99285 and 99291), 76.4% of non-frequent user visits were classified as being of low or moderate severity. A slightly lower percentage of ED visits by frequent users were considered to be of low to moderate severity: 68.7% for non-traveling frequent users and 72.1% for traveling frequent users. The most common services provided to all frequent users included the administration of medications, qualitative drug screens, and blood tests including complete (CBC), automated (Hgb, Hct, RBC, WBC and platelet count) and automated differential WBC count, blood creatinine tests, and blood glucose tests. Such services constitute basic emergency screening as required by the federal Emergency Medical Treatment and Active Labor Act (EMTALA) for all individuals presenting to an ED.

It is important to note that ED visits resulting from a transfer from another ED were included in this analysis and contributed to the total number of hospitals visited by an individual. At the same time, these visits represent just a small portion of the total; approximately 8% of traveling frequent users visited multiple ED facilities in a single day where one of those visits

resulted in a transfer to another facility.

The method of transport may play a role in patients visiting multiple facilities. When an ED has reached capacity, ambulance traffic can be diverted to a surrounding facility with open beds. Individuals transported by ambulance have a greater likelihood of arriving at a hospital they may not have visited otherwise. The percentage of visits originating by ambulance differed by ED user group. In FY03, 12.1% of outpatient non-frequent user visits began with an ambulance transport. Among frequent users, this percentage was higher. For non-traveling frequent users, 18.3% of outpatient visits originated by ambulance while 19.7% of visits by traveling frequent users began with ambulance

Figure 4: ED Visits by Transport Method to the ED, FY03

	Law		Other		Unknown
	Ambulance	Enforcement	Walk-in	(includes helicopter)	
Non-Frequent User Visits	12.1%	0.2%	75.7%	2.9%	9.1%
Frequent User Visits (1 to 3 EDs)	18.3%	0.4%	70.3%	3.0%	8.0%
Frequent User Visits: (4 or more EDs)	19.7%	0.4%	68.2%	4.8%	6.9%

transport (see Figure 4). Among all ED users, however, the most common mode of transport to the ED was private or public transportation (walk-in visits).

The issue of whether frequent users, or some subset of them, constitute an identifiable popu-

lation that persists over time and to which an intervention might be targeted is an important one. The question of how likely a patient is to remain a frequent user from one year to the next was examined by following frequent users from FY02 to FY03. In FY02, there were 64,262 frequent users in Massachusetts. In FY03, 28.4% (18,265) of these individuals remained frequent users while 46.5% (29,863) continued to use the ED but visited the ED fewer than five times. The remaining 25.1% (16,134) did not make any ED visits in FY03 (see Figure 5). Approximately 11% of the 16,134 did not appear in FY03 because DHCFP data show they had died during a hospital visit in FY02.

Traveling frequent users were significantly more likely to remain frequent users of ED services in subsequent years. Almost twice as many frequent users who visited four or more EDs in FY02 remained frequent users in FY03 compared to those who visited three or fewer (49.6% versus 26.2%).

Discussion

Frequent users make up 3.8% of ED users. In addition, frequent users who visit multiple ED facilities are a distinct subpopulation of frequent ED users. They are more likely to persist from year to year, and are more apt to present to the ED for specific conditions such as substance abuse, mental health related issues, back pain, diseases of the teeth, and migraine headaches. In many cases, these frequent users do not require the medical care available in an ED setting, but may need other services such as chronic treatment for substance abuse or mental illness.

From the point of view of individual hospitals, the percentage of visits made by frequent users varies considerably. At hospitals where ED visits of frequent users comprise 20% to 30% of the hospital's total ED visits, physicians staffing the ED may spend a significant part of

their shift serving these patients. Visits made by traveling ED users create a different challenge because ED physicians are not likely to be aware of the care these individuals have sought and received at other hospitals.

Since frequent ED users are not a homogeneous group, determining an intervention

Figure 5: Frequent Users in FY02 and their Status in FY03

	Remained a Frequent User in FY03	Became a Non-Frequent User in FY03	Did Not Use ED in FY03	Total
All FY02 Frequent Users	18,265	29,863	16,134	64,262
Percent of FY02 Frequent Users in FY03	28.4%	46.5%	25.1%	100.0%
Frequent Users by Traveling Status				
Non-Traveling Frequent Users in FY02	15,279	27,759	15,198	58,236
Percent of FY02 Non-Traveling Frequent Users in FY03	26.2%	47.7%	26.1%	100.0%
Traveling Frequent Users in FY02	2,986	2,104	936	6,026
Percent of FY02 Traveling Frequent Users in FY03	49.6%	34.9%	15.5%	100.0%

to curb inappropriate ED use while offering suitable care for the problems they have is challenging. Since the majority of frequent users visit more than one ED in the course of a year, the effectiveness of an intervention introduced by a single provider is likely to be limited. Also, EMTALA sets a minimum floor for the medical services physicians must provide for people presenting to an ED, even those seen just the day before. EMTALA requires that any patient who comes to an ED requesting "examination or treatment for a medical condition" must be provided with "an appropriate medical screening examination" to determine if he/she is suffering from an "emergency medical condition." Hospitals cannot withhold such services, but neither the patient nor the health system benefits from the repetitive screening that EMTALA requires.

Instead, consideration might be given to a coordinated payer-based program that determines which specific services (whether clinical or social) these individuals need to prevent them from presenting frequently to the ED. Payers

Analysis in Brief

Analysis in Brief reflects the goal of the Division of Health Care Finance and Policy to monitor changes in the health care marketplace through useful and timely analyses of health care data. Several times a year, this publication reports on our analyses of health care costs, quality and access.



Mitt Romney
Governor

Kerry Healey
Lieutenant Governor

Ronald Preston, Secretary
Executive Office of
Health and Human Services

Paul J. Cote, Jr., Commissioner
Division of Health Care Finance and Policy
2 Boylston Street, Boston, MA 02116
Tel: 617.988.3100
Fax: 617.727.7662
www.mass.gov/dhcfp

Staff for this issue:
Rachel Immekus

John Cai, Series Editor
Heather Shannon, Design
Shelley Fortier, Distribution

Analysis in Brief
Copyright © June 2005
Division of Health Care Finance and Policy

have the unique opportunity to identify visit trends across all hospitals and sites of care, and to develop an intervention for beneficiaries. This approach, however, may prove to be more difficult for patients who cycle through different payers. For the uninsured, care coordination is certainly more challenging. The implementation of electronic health records could prove to be a partial solution to this problem in the future. In addition, the new Virtual Gateway,

an Internet portal that offers easy access to people seeking state support, will centrally track the enrollment of individuals who apply for MassHealth and other state assistance at more than one location. With improvements in technology and the development of a coordinated payer-based program, it may be possible for payers to play a significant role in identifying patterns of frequent ED utilization and develop strategies for improving care.

-
- ¹ The Massachusetts Division of Health Care Finance and Policy does not collect any encounter data from Veterans' Administration (VA) hospitals. There is one ED in a VA hospital in Massachusetts, and visits to this ED are therefore missing.
- ² Lucas, RH and Sanford, SM. An analysis of frequent users of emergency care at an urban university hospital. *Annals of Emergency Medicine*. 1998 Nov; 32(5):563-8.
- ³ Mandelberg JH, Kohn RE, Kohn MA. "Epidemiologic analysis of an urban, public emergency department's frequent users." *Acad Emerg Med*. 2000, 7:637-46.